Claims

1. (Original) A method of treating or preventing an infection in a subject who has been exposed to or is at risk for exposure to *Bacillus anthracis*, *Yersinia pestis*, *Variola major*, *Histoplasma capsulatum*, *Haemophilus influenzae*, *Escherichia coli*, *Shigella flexneri*, *S. dysenteriae* (*Shigella bacillus*), *Salmonella*, *Staphylococcus* enterotoxin B, Ebola virus, tick-borne encephalitis virus, botulinum toxin, ricin toxin, cobra venom, shellfish toxin, botulinum toxin, saxitoxin, ricin toxin, tricothecene mycotoxin, or aflatoxin, comprising administering to the subject a therapeutically effective amount of an immunostimulatory D oligodeoxynucleotide or an immunostimulatory K oligodeoxynucleotide, thereby treating or preventing the infection.

2. (Original) The method of claim 1, wherein the subject has been exposed to or is at risk for exposure to *Bacillus anthracis*.

3. (Original) The method of claim 1, wherein the subject has been exposed to or is at risk for exposure to Ebola virus.

4. (Original) The method of claim 1, wherein the subject has been exposed to or is at risk for exposure to tick-borne encephalitis virus.

5. (Original) The method of claim 1, wherein the infection is anthrax, smallpox, Ebola, or tick-borne encephalitis.

6. (Original) The method of claim 5, wherein the infection is anthrax.

7. (Original) The method of claim 1, wherein the oligodeoxynucleotide is at least about 16 nucleotides in length and comprises a sequence represented by the following formula:

$$5' X_1X_2X_3 Pu_1 Py_2 CpG Pu_3 Py_4 X_4X_5X_6(W)_M(G)_N\text{-}3'$$

wherein the central CpG motif is unmethylated, Pu is a purine nucleotide, Py is a pyrimidine nucleotide, X and W are any nucleotide, M is any integer from 0 to 10, and N is any integer from 4 to 10.

8. (Original) The method of claim 7, wherein N is about 6.

9. (Original) The method of claim 7, wherein Pu_1 Py_2 CpG Pu_3 Py_4 are phosphodiester bases.

10. (Original) The method of claim 7, wherein $X_4X_5X_6(W)_M(G)_N$ comprises one or more phosphothioate bases.

11. (Original) The method of claim 7, wherein $X_1X_2X_3$ Pu Py and Pu Py $X_4X_5X_6$ are self complementary.

12. (Original) The method of claim 1, wherein the oligodeoxynucleotide comprises a sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13, SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 21, SEQ ID NO: 22, SEQ ID NO: 23, SEQ ID NO: 24, and SEQ ID NO: 25.

13. (Original) The method of claim 1, wherein the oligodeoxynucleotide comprises a sequence represented by the following formula:

5' $N_1N_2N_3Q$-CpG-$WN_4N_5N_6$ 3'

wherein the central CpG motif is unmethylated, Q is T, G or A, W is A or T, and N_1, N_2, N_3, N_4, N_5, and N_6 are any nucleotides.

14. (Original) The method of claim 13, wherein Q is a T.

15. (Original) The method of claim 1, wherein the oligodeoxynucleotide comprises a sequence selected from the group consisting of SEQ ID NO: 29, SEQ ID NO: 30, SEQ ID NO:

31, SEQ ID NO: 32, SEQ ID NO: 33, SEQ ID NO: 34, SEQ ID NO: 35, SEQ ID NO: 36, SEQ ID NO: 37, SEQ ID NO: 38, SEQ ID NO: 39, SEQ ID NO: 40, SEQ ID NO: 41, SEQ ID NO: 42, and SEQ ID NO: 43.

16-17. (Canceled).

18. (Previously Presented) The method of claim 1 further comprising administering to the subject a therapeutically effective amount of an anti-infective agent.

19. (Original) The method of claim 18, wherein the anti-infective agent is an antibiotic, an antiviral compound, an anti-fungal compound, or hyper-immune globulin.

20-36. (Canceled).

37. (Original) A method of enhancing the immunogenicity of a vaccine against a bioterrorism agent in a subject, comprising administering to the subject a therapeutically effective amount of an immunostimulatory D oligodeoxynucleotide or an immunostimulatory K oligodeoxynucleotide in combination with the vaccine, thereby enhancing the immunogenicity of the vaccine.

38. (Original) The method of claim 37, wherein the vaccine is an antigen vaccine, a DNA vaccine, a protein subunit vaccine, a peptide vaccine, an attenuated vaccine, or a heat-killed vaccine.

39. (Original) The method of claim 37, wherein the vaccine is a vaccine against *Bacillus anthracis*, *Yersinia pestis*, *Variola major*, Ebola virus, tick-borne encephalitis virus (TBEV), *Histoplasma capsulatum*, *Haemophilus influenzae*, *Escherichia coli*, *Shigella flexneri*, *S. dysenteriae* (*Shigella bacillus*), *Salmonella*, or *Staphylococcus*.

40. (Original) The method of claim 37, wherein the vaccine is an antigen from *Bacillus anthracis*.

41. (Previously Presented) The method of claim 40, wherein the antigen is recombinant Protective Antigen or Protective Antigen.

42. (Original) The method of claim 37, wherein the vaccine is Anthrax Vaccine Attenuated.

43. (Original) The method of claim 37, wherein the oligodeoxynucleotide is at least about 16 nucleotides in length and comprises a sequence represented by the following formula:

5' $X_1X_2X_3$ Pu_1 Py_2 CpG Pu_3 Py_4 $X_4X_5X_6(W)_M(G)_N$-3'

wherein the central CpG motif is unmethylated, Pu is a purine nucleotide, Py is a pyrimidine nucleotide, X and W are any nucleotide, M is any integer from 0 to 10, and N is any integer from 4 to 10.

44. (Original) The method of claim 43, wherein N is about 6.

45. (Original) The method of claim 43, wherein Pu_1 Py_2 CpG Pu_3 Py_4 are phosphodiester bases.

46. (Original) The method of claim 43, wherein $X_4X_5X_6(W)_M(G)_N$ comprises one or more phosphothioate bases.

47. (Original) The method of claim 43, wherein $X_1X_2X_3$ Pu Py and Pu Py $X_4X_5X_6$ are self-complementary.

48. (Original) The method of claim 37, wherein the oligodeoxynucleotide comprises a sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9,

SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13, SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 21, SEQ ID NO: 22, SEQ ID NO: 23, SEQ ID NO: 24, and SEQ ID NO: 25.

49. (Original) The method of claim 37, wherein the oligodeoxynucleotide comprises a sequence represented by the following formula:

5' $N_1N_2N_3Q$-CpG-$WN_4N_5N_6$ 3'

wherein the central CpG motif is unmethylated, Q is T, G or A, W is A or T, and N_1, N_2, N_3, N_4, N_5, and N_6 are any nucleotides.

50. (Original) The method of claim 13, wherein Q is a T.

51. (Original) The method of claim 37, wherein the oligodeoxynucleotide comprises a sequence selected from the group consisting of SEQ ID NO: 29, SEQ ID NO: 30, SEQ ID NO: 31, SEQ ID NO: 32, SEQ ID NO: 33, SEQ ID NO: 34, SEQ ID NO: 35, SEQ ID NO: 36, SEQ ID NO: 37, SEQ ID NO: 38, SEQ ID NO: 39, SEQ ID NO: 40, SEQ ID NO: 41, SEQ ID NO: 42, and SEQ ID NO: 43.

52. (Original) The method of claim 37, wherein the oligodeoxynucleotide is administered before the vaccine is administered to the subject.

53. (Original) The method of claim 52, wherein the oligodeoxynucleotide is administered from about two weeks to about one day before the vaccine is administered to the subject.

54. (Original) The method of claim 37, wherein the oligodeoxynucleotide is administered to the subject concurrently with the vaccine.

55. (Original) The method of claim 37, wherein the oligodeoxynucleotide is administered after the vaccine is administered to the subject.

56. (Original) The method of claim 55, wherein the oligodeoxynucleotide is administered from about two weeks to about one day after the vaccine is administered to the subject.

57. (Original) A method of enhancing the immunogenicity of an anthrax vaccine, comprising administering to the subject a therapeutically effective amount of an immunostimulatory D or K oligodeoxynucleotide and an anthrax vaccine, thereby enhancing the immunogenicity of the vaccine.

58. (Original) The method of claim 59, wherein the vaccine is Protective Antigen.

59. (Original) The method of claim 59, wherein the vaccine is Anthrax Vaccine Attenuated.